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ADDITIONS TO THE UNIONID FAUNA OF THE GULF DRAINAGE OF ALABAMA, GEORGIA AND FLORIDA (MOLLUSCA: BIVALVIA)

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More than a decade has passed since Clench and Turner (1956) published their pioneering work, "Freshwater Mollusks of Alabama, Georgia, and Florida from the Escambia to the Suwannee River." It is not surprising that in the time since the publication of that paper certain additions and corrections have been, and can be, made concerning the Unionidae.

Athearn (1964) added two new species, *Lampsilis haddletoni* and *Villosa choctawensis*, both from the Choctawhatchee River, Alabama. Johnson (1965) described *Anodonta peggyae* which ranges from the Choctawhatchee River, Alabama, to the Hillsborough River, Florida. Athearn (1964) convincingly differentiated *Lampsilis jonesi* Vander Schalie from *L. australis* Simpson, both from the Choctawhatchee River, Alabama, and regarded as synonymous by Clench and Turner.

In 1964 Athearn collected a live specimen of *Lampsilis binominatus* Simpson in the upper Flint River drainage of Georgia, which confirmed its distinctness from *Lampsilis excavatus* (Lea) and validated the earlier records thought to be in error by Clench and Turner. An examination of the type, and of subsequently collected specimens, has clearly shown that *Alasmidonta wrightiana* (Walker) of the Ochlockonee River, Florida, is distinct from *A. triangulata* (Lea) of the Apalachicola River system of Georgia and Florida. Under *Anodontoides radiatus* (Conrad), referred to as *A. elliotti* (Lea) by Clench and Turner, are included records of *Strophitus subvexus* (Conrad) from the Chipola River, Florida. *Obovaria rotulata* (Wright) from the Escambia River, Florida, was overlooked and has recently been rediscovered.

This paper is intended to be supplemental to the work of Clench and Turner. All of the species mentioned here are figured except

Anodonta peggyae Johnson which I described and figured in 1965. *Strophitus subvexus* (Conrad), *Anodontoides radiatus* (Conrad), *Lampsilis binominatus* Simpson, and *L. jonesi* Vander Schalie are fully described. Remarks are given on *Alasmidonta wrightiana* (Walker), *Obovaria rotulata* (B. H. Wright), *Lampsilis haddletoni* Athearn, and *Villosa choctawensis* Athearn.

All of the extant types of the various named forms mentioned here have been examined and photographed. I wish to thank Mr. Herbert D. Athearn for allowing me to examine his specimen of *Lampsilis binominatus* Simpson. Thanks are also extended to Drs. K. J. Boss, W. J. Clench, and R. D. Turner for reading the manuscript and suggesting improvements.

The following abbreviations have been used.

ANSP — Academy of Natural Sciences of Philadelphia, Pennsylvania.
MCZ — Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.
MZUM — Museum of Zoology, University of Michigan, Ann Arbor, Michigan.
USNM — United States National Museum, Washington, District of Columbia.

All specimens mentioned in the text are in the Museum of Comparative Zoology unless otherwise noted.

STROPHITUS SUBVEXUS (Conrad)

Plate 1, figures 1-3

Anodonta subvexa Conrad 1834, Amer. Jour. Sci., **25**: 341, pl. 1, fig. 12 (Black Warrior River [Alabama] type, ANSP [lost]).

Margaritana connasaugaensis Lea 1858, Proc. Acad. Nat. Sci. Phila., **10**: 138 (Connasauga River, one of the headwaters of the Alabama River, Gilmer Co., Georgia). Lea, 1859, Jour. Acad. Nat. Sci. Phila., (2)**4**: 229, pl. 32, fig. 113; figured holotype USNM 86277. Lea 1859, Obs. Unio, **7**: 47.

Margaritana spillmanii Lea 1858, Proc. Acad. Nat. Sci. Phila., **10**: 138 ([Magbys Creek, written on type, not located on modern county map] Tombigbee River, near Columbus [Lowndes Co.] Mississippi). Lea, 1862, Jour. Acad. Nat. Sci. Phila., (2) **5**: 105, pl. 17, fig. 252; figured holotype USNM 86278. Lea, 1862, Obs. Unio, **8**: 109.

Margaritana tombecbeensis [*sic*] Lea 1858, Proc. Acad. Nat. Sci. Phila., **10**: 138 (Tombecbee River, Columbus [Lowndes Co.] Mississippi).

Margaritana tombigbeensis Lea 1862, Jour. Acad. Nat. Sci. Phila. (2) **5**: 107, pl. 18, fig. 255; figured holotype USNM 86253. Lea, 1862, Obs. Unio, **8**: 111.

Margaritana gesnerii Lea 1858, Proc. Acad. Nat. Sci. Phila., **10**: 138 (Uphaupee Creek [Macon Co.] Alabama; Chattahoochee River, below Columbia [*sic*] [Columbus, Muscogee Co.] Georgia). Lea, 1862, Jour. Acad. Nat. Sci. Phila. (2) **5**: 211, pl. 32, fig. 280: figured holotype USNM 86212 from Uphaupee Creek. Lea, 1863, Obs. Unio. **9**: 33.

Margaritana alabamensis Lea 1861, Proc. Acad. Nat. Sci. Phila., **13**: 41 (Talladega Creek [Talladega Co.] Alabama). Lea, 1862, Jour. Acad. Nat. Sci. Phila., (2) **5**: 104, pl. 16, fig. 249; figured holotype USNM 86262. Lea, 1862, Obs. Unio, **8**: 108.

Margaritana columbensis Lea 1867, Proc. Acad. Nat. Sci. Phila., **19**: 81 (Tombigbee River, near Columbus [Lowndes Co.] Mississippi, type not in USNM [lost]).

Strophitus conasaugaensis [*sic*] (Lea). Ortmann, 1923, Nautilus, **36**: 130.

Strophitus subvexus (Conrad). Frierson, 1927, Check List North American Naiades, p. 23.

Strophitus spillmanii (Lea). Vander Schalie, 1940, Lloydia, **3**: 197.

Anodontoides elliotti (Lea). *partim*. Clench and Turner, 1956, Bull. Florida State Mus., **1**: 182.

Description. Shell medium in size, reaching about 100 mm in length. Outline subrhomboidal, becoming subelliptical or trapezoidal with age. Valves inequilateral, subcompressed to rather inflated, thin. Anterior end regularly rounded, posterior end obliquely subtruncate above, rounded or subtruncate below. Ventral margin almost straight, often becoming slightly arcuate with maturity. Dorsal margin short, forming a broad angle with the obliquely descending posterior margin. Hinge ligament short but prominent. Posterior ridge generally quite broad and very faintly double. Posterior slope flat or slightly concave. Umbos moderately swollen, slightly raised above the hinge line, located from about the center to the anterior third of the valves, their sculpture consisting of a few very strong ridges running parallel to the growth lines, somewhat interrupted at the posterior ridge. Surface of the shell smooth, generally shiny, waxy yellow, greenish yellow, brownish, often rayless, though sometimes with green rays especially on the posterior slope. Occasionally the surface has numerous broad green rays which give the whole shell a greenish appearance.

Left valve with a stumpy, vestigial pseudocardinal tooth directly below the umbo, sometimes with traces of first and third teeth, before and behind it. No lateral teeth. Right valve with one rather well developed pseudocardinal, triangular and compressed, or tubercular, knob-like and stumpy.

Umbonal cavities moderately deep with dorsal muscle scars.

Anterior adductor muscle scars well impressed, posterior ones less so. Pallial line faint. Nacre bluish, dull salmon or purplish, often spotted with yellow.

Measurements

Length mm	*Height* mm	*Width* mm	
59	36	25	Topotype of *S. subvexus* (Conrad) MCZ 146655.
62	36	24	Holotype of *M. connasaugaensis* Lea
77	52	37	Holotype of *M. tombigbeensis* Lea
92	56	39	Holotype of *M. gesnerii* Lea
93	51	40	Holotype of *M. spillmanii* Lea
116	54	38	Holotype of *M. alabamensis* Lea

Remarks. Strophitus subvexus (Conrad) of the Gulf drainage, shows some of the same diversity of shape as does *Strophitus undulatus* (Say) of the Atlantic drainage and interior basin. It is readily distinguished from *undulatus* which has entirely rudimentary pseudocardinals, represented, if at all, by slight swellings. In *S. subvexus* there is at least one pseudocardinal in each valve, and while small, they are usually well developed, triangular and compressed, or tubercular, knob-like and stumpy. It has also been confused with *Anodontoides radiatus* (Conrad), but that shell is always regularly elliptical with rays over the entire surface, while *subvexus* is subelliptical, inclined to be biangulate behind, seldom with rays over the entire surface, and with pseudocardinals that are less rudimentary.

Vander Schalie (1940) correctly reports this species from two localities on the Chipola River as *Strophitus spillmanii.* Clench and Turner (1956) assumed that Vander Schalie's specimens were *Anodontoides elliottii* (Lea) [= *radiatus* (Conrad)], but all of their records of *radiatus* from the Chipola River are *S. subvexus.*

Ortmann (1923) reviewed some of the names applied to the forms of this species, but did not include those from the Tombigbee River drainage. *S. subvexus* (Conrad), like its synonyms *connasaugaensis* Lea and *tombigbeensis* Lea, was founded on rather trapezoidal inflated individuals, while other names were given to the more common subelliptical specimens. Conrad's figured type which was about 2 inches (51 mm) in length, was specifically stated to be in the Academy of Natural Sciences of Philadelphia, but it has been lost. He did not give a precise locality, but in all probability the type came from the Black Warrior River in the vicinity of Tuscaloosa, Tuscaloosa Co., Alabama, since Conrad is known to have been there in June of 1833 (Wheeler, 1935: 38).

Range. Gulf drainage, from the Pascagoula River system of Mississippi to the Apalachicola River system of Georgia and Florida.

SPECIMENS EXAMINED

PASCAGOULA RIVER SYSTEM

Mississippi: Edahoma Creek, 6 mi. NW Soso, Jones Co.

ALABAMA-COOSA RIVER SYSTEM

Tombigbee River Drainage. — *Mississippi:* Tombigbee River, Columbus, Lowndes Co. *Alabama:* Coalfire Creek, Coalfire, Pickens Co. Bodka Creek, 5 mi. NW Gainsville, Sumter Co. Okatuppa Creek, 4 mi. SE Toxey, Choctaw Co. Black Warrior River, Tuscaloosa Co.

Cahawba River Drainage. — *Alabama:* Black Creek, St. Clair Co. Shoal Creek, Montevallo, Shelby Co.

Coosa River Drainage. — *Georgia:* Teloga Creek; Chattooga River, Summersville; *both* Chattooga Co. *Alabama:* Mills Creek, Cherokee Co. *Tennessee:* Conasauga River, Conasauga, Polk Co. *Georgia:* Conasauga River, Gregorys Mill, 10 mi. N Eaton, Murray Co. Conasauga River, Gilmer Co. (USNM). Conasauga River, 1.4 mi. N Resaca, Gordon Co. Black Creek, St. Clair Co. Chocciocca Creek, 3 mi. S Lincoln; Talladega Creek; *both* Talladega Co.

Tallapoosa River Drainage. — *Alabama:* Uphaupee Creek, Macon Co.

Alabama River Drainage. — *Alabama:* Cub Creek, Pine Hill, Wilcox Co.

APALACHICOLA RIVER SYSTEM

Chipola River Drainage. — *Florida:* Big Creek, 8 mi. W Malone, Jackson Co. Cowarts Creek, nr. Florida state line, Houston Co. (MZUM). Reedy Creek, 6 mi. W Malone; Chipola River, 1 mi. N Marianna; *both* Jackson Co. Chipola River, Scotts Ferry, Calhoun Co. (MZUM).

Chattahoochee River Drainage. — *Georgia:* [Chattahoochee River] below Columbus, Muscogee Co. (USNM).

Flint River Drainage. — *Georgia:* Kinchafoonee Creek, 4 mi. N Bronwood, Terrell Co. Ichawaynochaway Creek, 3 mi. N Morgan, Calhoun Co.

ANODONTOIDES RADIATUS (Conrad)

Plate 2, figures 1-4

Alasmidonta radiata Conrad 1834, Amer. Jour. Sci., **25**: 341, pl. 1, fig. 10 (small streams in South Alabama; measured holotype ANSP 41147 labeled, Greene Co.)

Margaritana elliottii Lea 1858, Proc. Acad. Nat. Sci. Phila., **10**: 138 (Chattahoochee River [below Uchee Bar] near Columbus [Muscogee Co.] Georgia). Lea, 1859, Jour. Acad. Nat. Sci. Phila., (2)**4**: 226, pl. 31, fig. 108, figured holotype USNM 86257. Lea, 1859, Obs. Unio, **7**: 44.

Margaritana elliptica Lea 1859, Proc. Acad. Nat. Sci. Phila., **11**: 113 (Tombigbee River, Columbus [Lowndes Co.] Mississippi). Lea, 1862, Jour. Acad. Nat. Sci. Phila., (2)**5**: 106, pl. 18, fig. 254; figured holotype USNM 86258. Lea, 1862, Obs. Unio, **8**: 110.

Anodonta showalterii Lea 1860, Proc. Acad. Nat. Sci. Phila., **12**: 307 (Coosa River Wetumpka [Elmore Co.] Alabama). Lea, 1862, Jour. Acad. Nat. Sci. Phila., (2)**5**: 215, pl. 33, fig. 284; figured holotype USNM 86487. Lea, 1863, Obs. Unio, **9**: 37.

Strophitus radiatus (Conrad). Frierson, 1927, Check List North American Naiades, p. 23.

Anodontoides elliotti (Lea). *partim*. Clench and Turner, 1956, Bull. Florida State Mus., **1**: 182, pl. 5, fig. 3.

Description. Shell generally small to medium in size, reaching 72 mm in length. Outline elliptical. Valves inequilateral, inflated, thin. Anterior end regularly rounded, posterior end rather pointed. Ventral margin slightly curved. Dorsal margin slightly curved scarcely forming an angle with the obliquely descending posterior margin. Hinge ligament covering most of the dorsal margin. Posterior ridge generally broad and rounded, occasionally subangulate. Posterior slope flat. Umbos moderately swollen, slightly raised above the hinge line, located toward the anterior third of the shell, their sculpture consisting of a few moderate ridges that curve up sharply behind. Surface of the shell smooth, brownish or brownish green, generally with bright or dark green rays of different widths over the entire surface of the shell.

Left valve with a rudimentary, laminate, somewhat bifurcated, pseudocardinal tooth. Hinge plate very narrow. No lateral teeth. Right valve with one long, narrow, low, pseudocardinal tooth, anterior to the umbo.

Umbonal cavities rather shallow with dorsal muscle scars. Anterior adductor muscle scars clearly outlined, posterior ones obscure. Pallial line faint. Nacre bluish white, often with yellow spots toward the umbonal cavities, iridescent posteriorly.

Length mm	*Height* mm	*Width* mm	
50	29	19	Holotype of *M. elliptica* Lea
64	36	22.5	Holotype of *A. radiata* Conrad
71	35.5	25.5	Mosquito Creek, Chattahoochee, Gadsden Co., Florida.
72	43	31	Holotype of *A. showalterii* Lea

Remarks. Anodontoides radiatus (Conrad) of the Gulf drainage, shows the same consistency of shape as does *Anodontoides ferussacianus* (Lea) of the interior basin. It is readily distinguished from *ferussacianus* which is toothless, by the presence of a vestigial tooth in each valve. *A. radiatus* is, in general, more consistently elliptical, and has brighter, more clearly defined rays. In the Gulf drainage, *A. radiatus* has been confused with *Strophitus subvexus* (Conrad). Clench and Turner's (1956:183) records of *elliotti* [= *radiatus*] from the Chipola are all *subvexus*.

A. radiatus differs from *S. subvexus* by being a smaller species with a consistently elliptical shell, having bright green rays over the entire surface of the shell, whereas *subvexus* is subelliptical, inclined to be biangulate behind, seldom with rays over the entire surface. The hinge teeth of *radiatus* are laminate and delicate, the left valve with a single bifurcated tooth, the highest portion often being posterior to the umbo, the right valve with one long narrow tooth, parallel to the anterior dorsal margin. The hinge teeth of *subvexus* are less delicate, the left valve with a stumpy, vestigial, pseudocardinal directly below the umbo, sometimes with the trace of a first and third tooth before and behind it, the right valve with a triangular, or knob-like tooth which is not parallel to the anterior dorsal margin.

Frierson (1927:23) gives the correct synonymy of this species. Conrad's holotype of *Alasmidonta radiata* is labeled as coming from Greene Co., Alabama. In all probability the type is from a tributary of the Black Warrior River near Erie [a town, no longer extant, about 10 mi. W Greensboro, Hale Co., Alabama] since Conrad is known to have been there around the first of June 1833 (Wheeler, 1935:38).

Range. Gulf drainage, from the Alabama-Coosa River system of Alabama to the Apalachicola River system of Georgia and Florida. Absent from the intervening Choctawhatchee River system and the Chipola River of the Apalachicola River system.

SPECIMENS EXAMINED

ALABAMA COOSA RIVER SYSTEM

Tombigbee River Drainage. — *Mississippi:* Tombigbee River, Columbus, Lowndes Co. (USNM). *Alabama:* [Tributary of Black Warrior River] Greene Co. (ANSP). [Tombigbee River] Margeno Co.

Coosa River Drainage. —*Alabama:* Coosa River, Wetumpka, Elmore Co. (USNM).

Alabama River Drainage. — *Alabama:* Pine Barren Creek, Camden, Wilcox Co.

ESCAMBIA RIVER SYSTEM

Conecuh River Drainage. — *Alabama:* Oakywoods Creek, Butler Co. Dry Creek, Brantly, Crenshaw Co.

APALACHICOLA RIVER SYSTEM

Chattahoochee River Drainage.—*Georgia:* Chattahoochee River, West Point, Troup Co. (USNM). Chattahoochee River, Uchee Bar, below Columbus, Muscogee Co. (USNM). Big Uchee Creek, Young's Bridge, 6 mi. NE Seale; Big Uchee Creek, below Fort Mitchell; *both* Russell Co.

Apalachicola River Drainage. — *Florida:* Mosquito Creek, 1 mi. S. Chattahoochee, Gadsden Co.

ALASMIDONTA WRIGHTIANA (Walker)

Plate 2, figure 5

Strophitus wrightianus Walker 1901, Nautilus, **15**: 65, pl. 3 (Tributaries of the Flint River, Baker Co., Georgia; holotype MZUM 74938. Type locality corrected to Ochlockonee River, Florida, on the authority of Walker, by Simpson, 1914, Cat. Naiades, **1**: 357).

Alasmidonta triangulata (Lea). *partim.* Clench and Turner, 1956, Bull. Florida State Mus., **1**: 180.

Remarks. In the Gulf drainage, *Alasmidonta wrightiana* (Walker) has been confused with *A. triangulata* (Lea) but it differs from that species by being elliptical, rather than triangular, by having a posterior ridge that is rounded rather than sharp, and especially by having a very characteristic sculpture on the posterior slope which consists of a number of ridges that extend from the posterior ridge to the dorsal and posterior margins. *A. triangulata* is not sculptured on the posterior slope.

Long known only from the holotype, the Museum of Comparative Zoology is grateful to the Florida State Museum for a more recently collected specimen.

Range. Gulf drainage, restricted to the Ochlockonee River, Florida.

SPECIMENS EXAMINED

OCHLOCKONEE RIVER SYSTEM

Ochlockonee River Drainage. — *Florida:* Ochlockonee River, bridge, 8 mi. W Tallahassee, Leon Co.

OBOVARIA ROTULATA (B. H. Wright)

Plate 3, figure 1

Unio rotulatus B. H. Wright 1899, Nautilus, **13**: 22 (Escambia River, Escambia Co., Florida; holotype USNM 159969, figured by Simpson, 1900, Proc. Acad. Nat. Sci. Phila., p. 78, pl. 4, fig. 2).

Obovaria rotulata (Wright). Simpson, 1914, Cat. Naiades, **1**: 297.

Remarks. Obovaria rotulata (Wright) of the Escambia River, differs from *Obovaria unicolor* (Lea) of the Alabama-Coosa River system by being almost circular in outline, the latter being elliptical or ovate. Overlooked by Clench and Turner, *rotulata* is the easternmost representative of *Obovaria* in the Gulf drainage. Formerly known only from the holotype, the Museum of Zoology, University of Michigan, has recently acquired specimens of this species collected by William H. Heard.

Range. Gulf drainage, restricted to the Escambia River, Florida.

SPECIMENS EXAMINED

ESCAMBIA RIVER SYSTEM

Escambia River Drainage. — *Florida:* Escambia River, Escambia Co. (USNM).

LAMPSILIS BINOMINATUS Simpson

Plate 2, figure 6; Plate 3, figure 2

Unio lineatus Lea 1840, Proc. Amer. Philos. Soc., **1**: 287 (Chattahoochee River, Columbus [Muscogee Co.] Georgia). Lea, 1842, Trans. Amer. Philos. Soc., **8**: 206, pl. 12, fig. 20; figured holotype USNM 84884. Lea, 1842, Obs. Unio, **3**: 44, *non Unio lineata* 'Valenciennes' Bory de St. Vincent 1827.

Lampsilis binominatus Simpson 1900, Proc. United States Natl. Mus., **22**: 528, new name for *Unio lineatus* Lea 1840.

Lampsilis excavatus (Lea). *partim.* Clench and Turner, 1956, Bull. Florida State Mus., **1**: 198.

Description. Shell rather small in size, not reaching over 58 mm in length. Outline of male elliptical; of female obovate. Valves inequilateral, somewhat inflated, and rather thin. Anterior end regularly rounded, posterior end distinctly pointed in the male, somewhat truncated in the female. Ventral margin straight or slightly curved in males, often extending below the base line in females. Dorsal margin short and straight, forming a broad angle with the obliquely descending posterior margin. Hinge ligament short but prominent. Posterior ridge faintly double, rather rounded and poorly defined. Posterior slope slightly concave, usually with a few faint ridges and wrinkles. Umbos moderately swollen, slightly raised above the hinge line, located toward the anterior third of the shell, their sculpture not observed. Surface of the shell smooth and shiny, waxy yellow, greenish yellow, sometimes brownish, with very fine, slightly interrupted, dark green rays over the entire surface of the shell.

Left valve with two serrated pseudocardinals, one in front of the other, the anterior one somewhat triangular, the hinder one much lower. Hinge line short but with a considerable interdentum, before two short straight lateral teeth. Right valve with two pseudocardinals, separated by a deep pit, the anterior tooth vestigial, the hinder one rather chunky and triangular; one lateral tooth.

Umbonal cavities rather deep with dorsal muscle scars. Anterior adductor muscle scars well impressed, posterior ones less so. Pallial line faint. Nacre bluish white, or salmon colored

Measurements

Length mm	*Height* mm	*Width* mm	
33	23	16	Holotype of *U. lineatus* Lea, female
37	28	19	Chattahoochee River, Columbus, Muscogee Co., Georgia, female
38	25	18	*Ibid.*, male
58	41	32	Line Creek, ½ mi. W Digbey, Spaulding Co., Georgia, male

Remarks. Lampsilis binominatus Simpson of the upper Flint River drainage, has been confused with *Lampsilis excavatus* (Lea) which ranges from the Amite River in Louisiana to the Escambia River of Alabama and Florida. *L. binominatus* appears to be a much smaller species. When specimens of the same size of both species are compared, the males of *binominatus* are more elliptical, and specimens of both sexes have narrower, sharper, darker green rays which are consistently linear and do not broaden and become diffuse as do the rays of *L. excavatus*.

Clench and Turner did not find *L. excavatus* east of the Escambia River, and since they did not recognize *L. binominatus*, they assumed its type-locality to have been in error. Subsequent collecting has substantiated the original locality.

Range. Gulf drainage, limited to the Upper Apalachicola River system.

SPECIMENS EXAMINED

APALACHICOLA RIVER SYSTEM

Chattahoochee River Drainage. — *Georgia:* Chattahoochee River, Westpoint, Troup Co. (H. D. Athearn, formerly Boston Soc. Nat. Hist. 3526). Chattahoochee River, Columbus, Muscogee Co.

Flint River Drainage. — *Georgia:* Line Creek, ½ mi. W Digbey, Spaulding Co. (H. D. Athearn).

LAMPSILIS JONESI Vander Schalie

Plate 3, figure 5

Lampsilis jonesi Vander Schalie 1934, Nautilus, **47**: 125, pl. 15, figs. 1a, 1b, 2, 3a, 3b (Pea River, Priston's Mill, Dale Co., Alabama; holotype, Alabama Mus. Nat. Hist.)

Lampsilis australis Simpson. *partim.* Clench and Turner, 1956, Bull. Florida State Mus., **1**: 182.

Lampsilis jonesi Vander Schalie. Athearn, 1964, Nautilus, **77**: 138.

Description. Shell generally small to medium in size, reaching 48 mm in length. Outline subovate or elliptical, moderately elongate. Valves inequilateral, not much inflated, and rather solid. Anterior end regularly rounded, posterior end generally distinctly biangulate. Ventral margin slightly curved. Dorsal margin slightly curved, forming a sharp angle with the obliquely descending, doubly scalloped, posterior margin. Female shells show general swelling of the disc below the posterior ridge, and the ventral margin is more angular than that of the male shell. Hinge ligament short. Posterior ridge broad, but distinctly double. Posterior slope slightly concave. Umbos moderately swollen, slightly raised above the hinge line, located toward the anterior quarter of the shell, their sculpture not seen. Surface of the shell smooth, shining, olivaceous green or olivaceous yellow, usually with irregularly distributed green rays.

Left valve with two solid, compressed, jagged pseudocardinals, a slight interdentum, and two thin slightly granular lateral teeth. Right valve with two pseudocardinals, the more posterior one rudimentary, the anterior one well developed, stumpy, and jagged; one lateral tooth.

Umbonal cavities shallow, with traces of dorsal muscle scars. Anterior muscle scars well impressed, posterior ones less so. Pallial line distinct anteriorly. Nacre bluish-white, thickened anteriorly; thinner and slightly iridescent posteriorly.

Measurements

Length mm	*Height* mm	*Width* mm	
46	22.5	16	Lectotype of *L. jonesi* Vander Schalie
48.5	23	18	Allotype

Remarks. Lampsilis jonesi Vander Schalie of the Choctawhatchee River system has been confused with *Lampsilis australis* Simpson, a species which occurs in the Choctawhatchee and Escambia drainage systems. The posterior ridge of *L. jonesi* is double, often with a distinct tertiary ridge above. The extremities of the ridges form a scalloped edge posteriorly, a unique character. The posterior ridge of *australis* is poorly defined and ends in a blunt point. The periostracum of *jonesi* is somewhat coarse, while that of *australis* is often smooth and glossy. *L. jonesi* is somewhat cylindrically shaped, *australis* is more elliptical and less inflated. Females of *jonesi* exhibit a swelling of the disc below the posterior ridge, rendering the ventral margin slightly angular, while those of *australis* only show a greater rounding of the ventral margin.

Vander Schalie compared *jonesi* to *Lampsilis subangulata* (Lea) which he said occurred with it in the Choctawhatchee River system, but these were actually specimens of *australis* since *subangulata* is restricted to the Apalachicola and Ochlockonee River systems. The two records of Clench and Turner (1956:198) from the Choctawhatchee River system listed as *subangulata* are *australis*.

Lampsilis subangulata and *australis* are allopatric. *Lampsilis subangulata* is generally more attentuate and pointed posteriorly, more inflated, with a sharper posterior ridge and a more excavated posterior slope. The surface is more highly polished and the green rays are sharper and brighter.

Vander Schalie did not specifically designate a holotype for *L. jonesi* though he makes it clear that it is in the Alabama Museum of Natural History. It is assumed that he intended the male specimen shown on his plate 15, figures 1a, 1b, to be the holotype. It is here selected as the lectotype.

Range. Gulf drainage, restricted to the Choctawhatchee River system of Alabama and Florida.

SPECIMENS EXAMINED

CHOCTAWHATCHEE RIVER SYSTEM

Pea River Drainage. — *Alabama:* Pea River, Elamville, Barbour Co. Pea River, Priston's Mill, Dale Co. Pea River, Flemings Mill, Coffee Co.

Choctawhatchee River Drainage. — *Alabama:* East Fork Choctawhatchee River, Midland City, Dale Co. East Fork Choctawhatchee River, 8 mi. W Abbeville, Henry Co. West Fork Choctawhatchee River, 7 mi. SE Ozark; Choctawhatchee River, 1 mi. N Newton; *both* Dale Co.

LAMPSILIS HADDLETONI Athearn

Plate 3, figure 3

Lampsilis haddletoni Athearn 1964, Nautilus, **77**: 135, pl. 9, figs. g, h. (Choctawhatchee River, West Fork, 7 mi. SW Ozark, Dale Co., Alabama; holotype, National Museum of Canada 20095).

Remarks. Lampsilis haddletoni Athearn is known only from the two specimens collected at the type locality. It "appears somewhat similar to *L. ochracea* (Say) [of the Atlantic drainage]. It is smaller than that species, less inflated, the shell thicker, and the cardinal teeth are much larger. The species differs from *Villosa choctawensis* Athearn by its orbicular outline, flesh colored nacre and in particular in the coloration of the epidermis [periostracum]. The [periostracum] of *L. haddletoni* is darker anteriorly on the disc while it is lighter near the ventral margin and on the posterior slope. Rays are prominent only on the posterior slope. The [periostracum] of adult *V. choctawensis* is dark throughout except in the vicinity of the umbones where it appears lighter and exhibits fine rays." (Athearn)

VILLOSA CHOCTAWENSIS Athearn

Plate 3, figure 4

Villosa choctawensis Athearn 1964, Nautilus, **77**: 137, pl. 9, figs. c, d, e, f. (Choctawhatchee River, 2 mi. SW Caryville; about 1 mi. downstream from U. S. Highway 90, Holmes Co., Florida; holotype National Museum of Canada 20096).

Pleurobema strodeanum (B. H. Wright). *partim.* Clench and Turner, 1956, Bull. Florida State Mus., **1**: 161.

Remarks. "*Villosa choctawensis* has probably been mistaken for *Pleurobema strodeanum* B. H. Wright by collectors in the past. The males of *V. choctawensis* are strikingly similar to that species. However, they lack the consistently well defined posterior ridge of *P. strodeanum.* The male and female shells of *P. strodeanum* are essentially alike as is characteristic of shells of the genus *Pleurobema.* Sexual dimorphism is well defined in specimens of *V. choctawensis.*

"The nacre of the posterior area of *V. choctawensis* lacks most of the bluish appearance found in that area of *P. strodeanum. V. choctawensis* is in some respects similar to *V. villosa* B. H. Wright but is much shorter than that species." (Athearn) The records below are supplemental to those given by Athearn.

Range. Gulf drainage, restricted to the Choctawhatchee River system.

SPECIMENS EXAMINED

CHOCTAWHATCHEE RIVER SYSTEM

Pea River Drainage.—*Alabama:* Pea River, ½ mi. SW Geneva, Geneva Co.

Choctawhatchee River Drainage.—*Florida:* Choctawhatchee River, 8 mi. W Miller's Cross Roads, Holmes Co.

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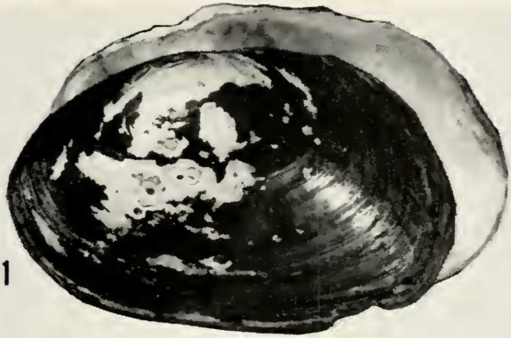
PLATE 1

FIG. 1, *Strophitus subvexus* (Conrad). Black Warrior River, Tuscaloosa Co., Alabama. Topotype MCZ 146655. Length 59, height 36, width 25 mm (nat. size).

FIG. 2, *Strophitus subvexus* (Conrad). [Magbys Creek of] Tombigbee River, near Columbus [Lowndes Co.] Mississippi. Holotype USNM 86278 of *Margaritana spillmanii* Lea. Length 93, height 51, width 40 mm (slightly reduced).

FIG. 3, *Strophitus subvexus* (Conrad). Cowarts Creek, nr. Florida state line, Houston Co., Florida. MZUM 138467. Length 86, height 47, width 37 mm (slightly reduced).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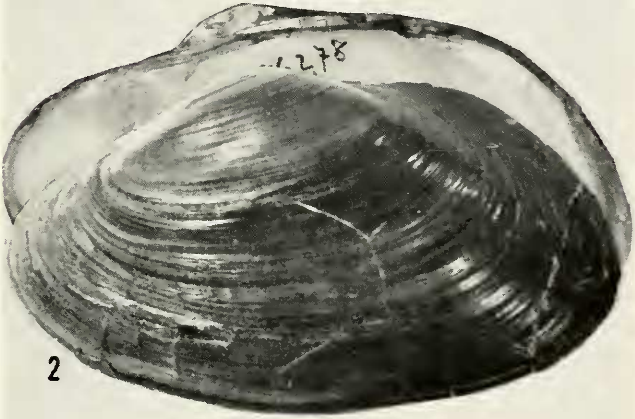

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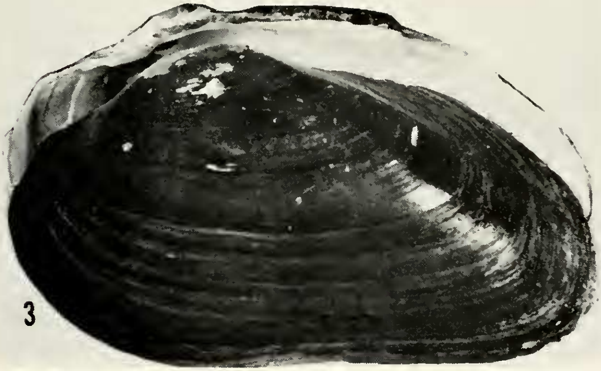
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PLATE 2

FIG. 1, *Anodontoides radiatus* (Conrad). [Tributary of Black Warrior River, Greene Co., Alabama]. Holotype ANSP 41147. Length 64, height 36, width 22.5 mm (slightly reduced).

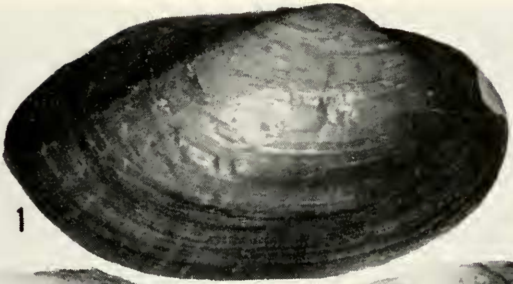
FIG. 2, *Anodontoides radiatus* (Conrad). Chattahoochee River [below Uchee Bar] near Columbus [Muscogee Co.] Georgia. Holotype USNM 86257 of *Margaritana elliottii* Lea. Length 45, height 26, width 18 mm (slightly reduced).

FIG. 3, *Anodontoides radiatus* (Conrad). Tombigbee River, Columbus [Lowndes Co.] Mississippi. Holotype USNM 86258 of *Margaritana elliptica* Lea. Length 50, height 29, width 19 mm (slightly reduced).

FIG. 4, *Anodontoides radiatus* (Conrad). Coosa River, Wetumpka [Elmore Co.] Alabama. Holotype USNM 86487 of *Anodonta showalterii* Lea. Length 72, height 43, width 31 mm (slightly reduced).

FIG. 5, *Alasmidonta wrightiana* (Walker). Ochlockonee River, Florida. Holotype MZUM 74938. Length 54, height 38, width 31.5 mm (nat. size).

FIG. 6, *Lampsilis binominatus* Simpson. Chattahoochee River, Columbus [Muscogee Co.] Georgia. Holotype USNM 84884 of *Unio lineatus* Lea. Length 33, height 33, width 16 mm, female (slightly reduced).



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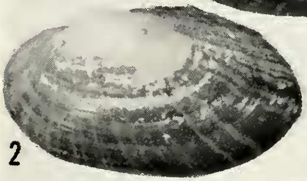

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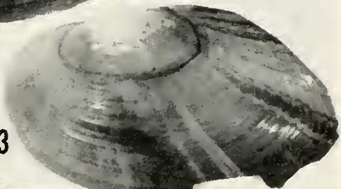

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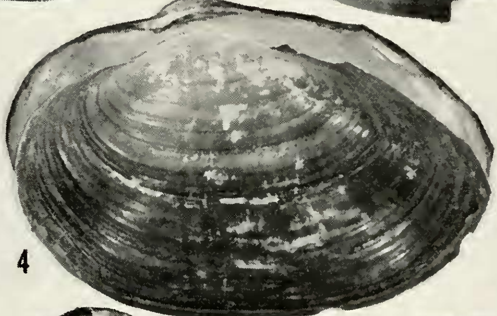

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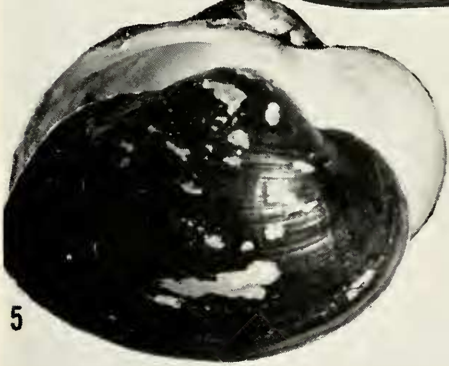

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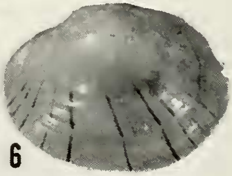

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PLATE 3

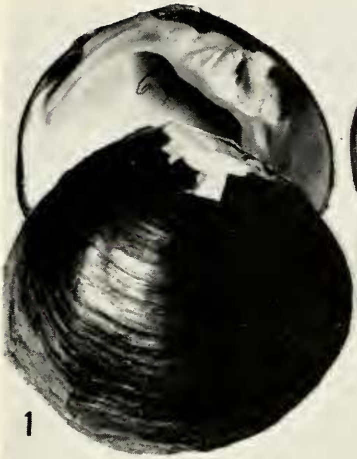
Fig. 1, *Obovaria rotulata* (B. H. Wright). Escambia River, Escambia Co., Florida. Holotype USNM 159969. Length 48, height 45, width 32 mm (nat. size).

Fig. 2, *Lampsilis binominatus* Simpson. Line Creek, ½ mi. W. Digbey, Spaulding Co., Georgia. Collection of H. D. Athearn. Length 58, height 41, width 32 mm, male (slightly reduced).

Fig. 3, *Lampsilis haddletoni* Athearn. Choctawhatchee River, West Fork, 7 mi. SW Ozark, Dale Co., Alabama. Holotype National Museum of Canada 20095. Length 30, height 23, width 12.5 mm (slightly enlarged).

Fig. 4. *Villosa choctawensis* Athearn. Choctawhatchee River, 2 mi. SW Caryville; about 1 mi. downstream from U. S. Highway 90, Holmes Co., Florida. Holotype National Museum of Canada 20096. Length 37, height 26, width 16.5 mm, male (slightly enlarged).

Fig. 5, *Lampsilis jonesi* Vander Schalie. Pea River, near Elamville, Barbour Co., Alabama. While not exactly from the type locality, this specimen was received from Vander Schalie labeled as a paratype, MCZ 98802. Length 48, height 24, width 16 mm, female (slightly enlarged).



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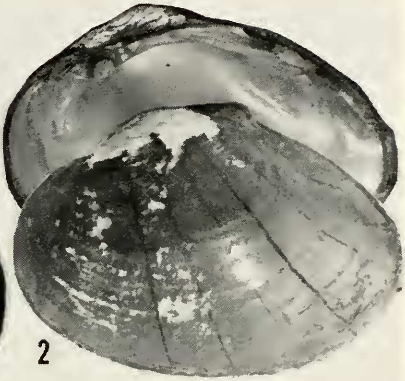

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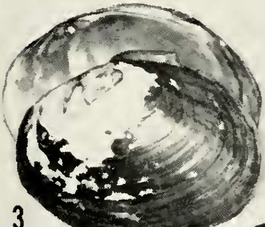

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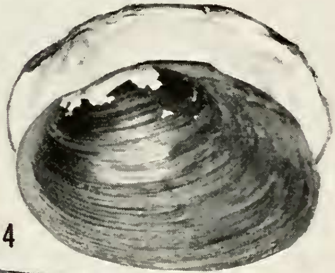

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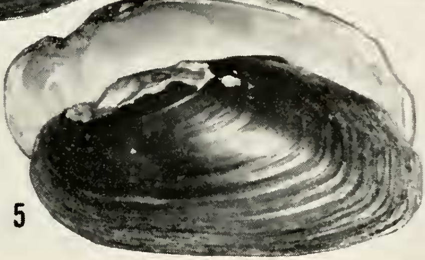

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